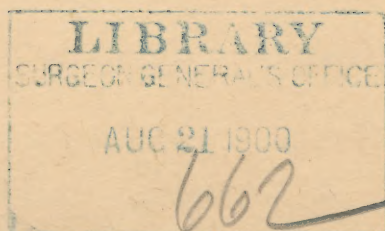


COHEN (Sol = Solis)

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of pneumonia . . . .







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## ON THE NATURE AND TREATMENT OF PNEUMONIA.<sup>1</sup>

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By pneumonia, I mean croupous or acute lobar pneumonia, a disease which in most cases is to be ranked among the infectious fevers, having a definite local lesion. The old name "lung fever" is much more appropriate than the designation pneumonitis, which, for a while, held sway in our modern pathologic nomenclature. There are cases of inflammation of the lungs, pneumonitis properly so-called, which result from traumatism, from exposure to cold, from inhalation of smoke, steam, overheated air, and the like, just as similar causes excite inflammations elsewhere. But the disease to which I refer at present is caused by infection, the barriers of normal resistance having been broken down by general disease or by special accident. It exhibits many varieties to which I can refer only in passing. Whether or not the so-called pneumococcus is the infective agent I am by no means satisfied; much of our modern bacteriologic etiology and pathology is vitiated by sweeping conclusions from insufficient evidence, and by the logical fallacy of *petitio principii*—begging the question, or reasoning in a circle. But be this as it may, normal resistance being at fault, infection takes place in some way and through some agent, and is followed by intoxication; concomitantly with which, structural changes take place in and around the pulmonary alveoli, involving a greater or less continuous area; usually, but by no means invariably, in a lower lobe. These changes, while analogous to those which we call inflammatory, will, I think, in the further course of science be classed together with those changes which take place in the intestine in typhoid fever, in a distinct species, if not genus.

The point to which I desire to direct your attention now, is their analogy with the in-

testinal lesions of typhoid fever, as constituting not the disease itself to which the febrile and other general symptoms are secondary, but merely the anatomic expression of a special form of infection which likewise manifests itself by general intoxication, giving rise to fever, dyspnea, and disturbed action of the heart. The dyspnea and the cardiac disturbances are increased by the fact that this anatomic lesion of which we have spoken involves an important portion of the respiratory apparatus, and mechanically interferes with the balance of circulation. We have, therefore, two main conditions to deal with: First, the intoxication with its fever, prostration, delirium and other nervous concomitants, including dyspnea and circulatory imbalance; and secondly, the mechanical results of pulmonary consolidation—diminution of air-space in the lungs, blocking of a larger or smaller portion of the vascular canal, and, as results of the action and interaction of these conditions, imperfect purification of the blood, and opposition to the action of the right heart, increasing the respiratory and circulatory disturbance.

While, therefore, intoxication and its results must receive primary attention, the mechanical phenomena spoken of, involving, as they do, two physiologic systems of the highest importance, must receive proper consideration. In a strong patient seen early, I have no hesitation in commending resort to venesection. The removal of, say, sixteen ounces of blood, removes considerable *pneumotoxin* and, likewise, relieves the mechanical congestion of the lung, favoring the early termination of the local process. So, too, in a case not in its earliest stage, in which the right heart is laboring against pressure which it can scarcely overcome, the relief

<sup>1</sup>Remarks made at the Polyclinic Hospital.



afforded to this viscus by depletion of the general venous circulation is sometimes sufficient to turn the scale in favor of recovery.

This fact is not to be proved either by the relation of individual cases or by the massing of statistics. No case-description can convey to another the impression made upon the observer either of the dangers threatened or the relief afforded; while statistics, including as they do cases of great variety in causation, course, complications, environment, including season and weather, to say nothing of age, sex, temperament, personal idiosyncrasy and the like, are utterly without value to the thinking mind.

However, it is in the smallest proportion of cases of lung fever that venesection will find an appropriate place. In the majority of cases other measures will be more rational or more successful. I do not agree with my friend, the distinguished teacher, who in his great treatise on the practice of medicine intimates that the mortality of pneumonia, taken by and large, is at all events not diminished by any method of treatment hitherto employed. Nevertheless, I believe that we can trust much to nature—that is to say, to the inherent recuperative tendencies of the human organism; seeking to discover the course which these take and interfering only when that course seems to be departed from in the individual case. On the other hand, if by any means in our power we can facilitate the natural evolution of the disease toward recovery, such measures are eminently appropriate.

The febrile temperature is one of the most important indications in this connection. When, in acute infective pneumonia, the temperature is low, the usual inference is that intoxication is profound and vital reaction imperfect; while, on the other hand, an excessively high temperature indicates a severe infection with violent reaction and corresponding danger. Both extremes, therefore, awaken solicitude on the part of the physi-

cian. An average temperature of  $102.5^{\circ}$  to  $104^{\circ}$  F. is the most favorable.

Cases with what we may call the temperature of depression, need more than usually careful watching in respect to diet and to general environment, and call for the administration of supporting and stimulating remedies, such as strychnin, camphor, ammonia, and in some instances alcohol, together with the early and sufficient use of oxygen by inhalation, and the most scrupulous avoidance of those sudden changes of posture and the like which are likely to add to the disturbance of the vascular equilibrium. In the aged, the application of external heat is sometimes useful—not merely to raise temperature, but to counteract the depressing effects of the causes of lower temperature. In cases showing violent temperature, cooling applications may be necessary to counteract the effects of excessive heat upon the nervous system; and these may take the form of the cold bath, the wet pack, the ice pack to the chest, frequent cold sponging or cold compresses, as advised by Dr. Baruch, according to the circumstances of the case and of the nursing.

In the moderate cases my own preference is—apart from the necessary sponging for cleanliness and stimulation of the skin—for the external application of heat and moisture over the chest, as accomplished by the old-fashioned jacket poultice, although in these cases, the compresses advised by Dr. Baruch also seem to serve the purpose admirably. This purpose is neither the elevation nor the reduction of temperature, but action upon the vascular system—upon the “skin heart”—relaxing the opposition to cardiac action, increasing the tone—not the tension—of the vessels both by local and reflex effect and thus directly or indirectly relieving a portion of the mechanical difficulty of circulation. In these cases, also, the internal administration of strychnin is useful, though alcohol is rarely necessary.



In all cases, careful attention to the excretions is required. Free diuresis, diaphoresis, and purgation are to be encouraged, if necessary, by the use of calomel, of saline cathartics and diuretics and by external applications to the skin, the nature of which is to be determined by considerations previously referred to—that is to say, warm or cold sponging, poultices, or moist compresses.

I am in the habit of administering a stimulant expectorant mixture in somewhat of a routine fashion to most patients with pneumonia, and I think the practice is a good one, though rather on empiric, than scientific grounds. In other words, observation shows the practice to have good effect, though I cannot frame a theory to explain this effect capable of successful defense against all assaults. By experience I refer not to my individual experience only, but to the traditions of the profession. The formula I use most frequently is about as follows:

|                               |             |
|-------------------------------|-------------|
| Ammonium chlorid . . . .      | 10 grains.  |
| Ammonium carbonate . . . .    | 5 grains.   |
| Ammonium salicylate . . . .   | 5 grains.   |
| Fluid extract of coca . . . . | 1 fluidram. |
| Essence of pepsin . . . . .   | 1 fluidram. |
| Sirup of tolu . . . . .       | 1 fluidram. |
| Water . . . . .               | 1 fluidram. |
| Mix.                          |             |

To make a tablespoonful, which is to be given with or without water every second to fourth hour.

The object of the coca is to disguise the taste, of the pepsin to prevent nausea, of the sirup to render the dose a little more smooth and palatable; and any of these, therefore, can be substituted by whatever individual fancy or experience may suggest. Licorice, as all know, is often an acceptable means of disguising the taste of the ammonium salts and acacia frequently serves better than sirup. Coca has, however, some action upon the heart and kidneys, which is additionally useful; and spirit of nitrous ether may be added for diuretic effect if deemed needful. One can, if he chooses, add nuxvomica and digitalis to this mixture, though as regards the former drug I prefer to give

strychnin separately, so that the size and frequency of doses may be varied according to circumstances; and as regards the latter drug, I seldom use it in the treatment of pneumonia. There are cases, however, in which it is useful as a cardiac tonic, especially in the middle period of the disease and again after resolution has occurred.

Of drugs designed to act upon the heart I prefer aconite and nitroglycerin; the first has usefulness only before consolidation, as indicated by bronchial breathing, has taken place. It is, however, undoubtedly useful during the preliminary stage of congestion in which the crepitant râle is heard. It probably acts mechanically. Nitroglycerin finds its use during the stage of hepatization, to relax the vascular channel generally, both pulmonary and systemic, and in that way, in some measure obviates the necessity of venesection. It should be given as *spirit of glonoin* in drop doses every hour at first, until the patient's susceptibility is ascertained, when the size of the doses and the intervals should be regulated accordingly. One judges by the effect upon the tension, force and frequency of the pulse, and by the condition of the right heart.

I have referred to the use of oxygen by inhalation. Let me now repeat and emphasize the recommendation. It undoubtedly saves life in many cases; but to do this it must be given promptly and persistently. To wait until a patient is moribund and then attempt to revive him with a few cubic feet of oxygen forced into his lungs would be ludicrous, were it not so serious. Oxygen to be useful must be given so soon as the thought that it may be necessary enters the physician's mind. That thought will be suggested by the respiratory distress, and by the extent of local lesion as demonstrated by physical signs. Observe, please, that these are not identical conditions, nor conditions invariably associated. It is true that extensive lesion will usually cause great embarrass-



ment of breathing; but frequently there is a dyspnea of nervous origin, with comparatively restricted local lesion. Often after the crisis, resolution not having occurred, local lesion remaining, extensive dyspnea will have vanished; an evident proof that it was not of merely mechanical origin.

Now either condition, whether severe nervous dyspnea—*pneumoparesis*—which is especially associated with the pneumonia of influenza, or great mechanical difficulty of breathing, or their combination, calls for the timely and sufficient use of oxygen.

The air-current, doubly necessary in a condition of intoxication, is diminished, oxygen is not supplied in necessary quantity, the necessity for a more concentrated respiratory pabulum is manifest. Pure oxygen is usually best; in some cases its combination with a small proportion of nitrous oxide answers. It has been advised to heat the oxygen, but personally I have seen no better results with the heated gas than with the unheated gas. Recently-evolved oxygen is preferable to stored oxygen, and there are in the market some quite readily available forms of apparatus for its production, of which Wallian's seems the most convenient. The compressed gas, however, is usually better managed by nurses, and will serve the purpose in most cases.

In the apparatus that I employ, the gas, which is chemically pure, but diluted with about 5 per cent. of air, owing to the method of storage, is furnished in cylinders containing 100 gallons. From the cylinder outlet, which is controlled by a key, it passes to a small rubber bag and from this to a quart wash-bottle, about one-third filled with water. Bubbling continuously through the water, as it overflows the bag, it passes through rubber hose and hard-rubber mouth- or nose-piece into the patient's throat, by way of the mouth or nasal chamber. When the patient is comparatively strong the pressure is so adjusted that a slight inspiratory effort is necessary to bring the oxygen over, and during expiration the current ceases. But

in the vast majority of cases, the gas is allowed to flow over gently but continuously, no attempt being made to check the current synchronously with expiration. Oxygen is thus wasted, but life is often saved.

The administration of oxygen is kept up for from ten minutes to thirty-six hours or more, uninterruptedly, according to circumstances. If begun in time, it will usually be found that one-half hour's continuous inhalation, repeated every second hour, will suffice. I have known it to be ordered for 10 minutes at a time, three times daily, or perhaps every fourth hour, in a serious case. This is simply tomfoolery. In a desperate case the oxygen must be given as nearly continuously as possible until relief is manifest. When the patient is unconscious, nasal delivery is usually the better method. Hard-rubber nozzles are preferred to avoid danger of breakage by unconscious movements of the patient. The apparatus should be thoroughly disinfected after each case, so that it goes not only mechanically, but medically clean to the next case.

Conjointly with the inhalations of oxygen in severe cases, it is usually necessary to give strychnin nitrate hypodermatically, say  $\frac{1}{20}$  grain, every second to sixth hour, according to results. These cases, too, usually call for the sufficient use of nitroglycerin or amyl nitrite. Not rarely I use a mixture containing ammonium carbonate five grains, with amyl nitrite three drops, in a fluidram each of glycerin and alcohol, every second or third hour, as suggested by B. W. Richardson. In these bad cases, too, time for natural recovery is sometimes gained by temporary stimulation of the heart, as with cocaine, musk or camphor, preferably under the skin.

In regard to the various complications that may occur in pneumonia it suffices to say that they are to be met, as they arise, on general principles. That means that there is to be no unnecessary interference; but when interference is needed it is to be prompt and bold.





